

**Haines Hwy H&H report - Culvert summary**

Ref: Handbook of Steel Drainage &amp; Highway Construction Products, 1983, AIS

0.20\*rise (pipe arch)

Station S&HI	Prop. Road CL elev	~ Cover (ft) based on prop rd elev	cover (H 20 Live load)			Length (ft)	Pipe Invert - (Preliminary design)			min bury depth	bury depth	50-yr HW/d	Proposed design											
			min (in)	max (ft)	Table		inlet	outlet	datum				method	Design fish	justification	Wch	Dch	- method	Comment	span	rise	size	type	
24550	26.92	2.13	12	17	HC-8	85	19.87	18.86	-dot&pf datum	0.98	1.05	1.02	tier 1		habitat	6.0		total station		6.75	4.917	6'-9"x4'-11"	pipe arch	
34200	31.57	1.02	12	17	HC-8	65	25.63	24.76	-dot&pf datum	0.98	1.05	1.16	tier 1		habitat	4.6		total station		6.75	4.917	6'-9"x4'-11"	pipe arch	
34750	31.25	1.38	12	17	HC-8	63	24.96	23.79	-dot&pf datum	0.98	1.05	imprv from ex.	tier 1		habitat	6.3		total station		6.75	4.917	6'-9"x4'-11"	pipe arch	
50625	41.89	2.46	12	17	HC-8	67	34.10	33.40	-dot&pf datum	1.07	1.05	1.29	tier 1		habitat	7.2		total station		7.33	5.33	7'-4"x5'-4"	pipe arch	
53525	43.31	1.77	16.9	5	T1-31	64	35.37	34.77	-dot&pf datum	1.23	1.73	<1.0	tier 1		habitat	13.8		total station		14.083	6.167	14'-1"x6'-2"	alum box	
61250	49.62	2.34	12	17	HC-8	64	41.95	41.95	dot&pf	1.07	1.05	1.05	tier 1		habitat	5.3		total station		7.33	5.33	7'-4"x5'-4"	pipe arch	
67000			11	5	T1-31	debris flow							debris flow			8.7		total station		9.17	3.25	9'-2"x3'-3"	alum box	
73100	61.34	4.21	24	6	HC-11	98	48.8	47.39	dot&pf	1.67	1.67	<1.0	tier 1		habitat	12.6		total station		12.58	8.33	12'-7"x8'-4"	pipe arch	
88600	75.37	2.47	24	16	HC-8	72	65.48	64.52	-dot&pf	1.48			tier 1			11.4		total station		11.58	7.42	11'-7"x7'-5"	pipe arch	
90850	74.63	1.88	12	17	HC-8	75	67	65.97	dot&pf	n/a	n/a	1.01	tier 2	juv coho	low gradient / BW channel	12.0		hand meas		8.17	5.75	8'-2"x5'-9"	pipe arch	
98300					debris flow								debris flow					total station				debris flow		
99450					debris flow								debris flow					total station				debris flow		
112325	132.66	8.52	12	17	HC-8	90	118.89	115.09	dot&pf	1.05	1.05	1.46	tier 1		habitat	6.0		total station		7.25	5.250	7'-3"x5'-3"	pipe arch	
120060					debris flow								debris flow					total station				debris flow		
120820					debris flow								debris flow					total station				debris flow		
<b>Smaller fish pipes</b>																								
25200	26.68	2.39	12.00	99.00	HC-1	63	22.29	21.43	dot&pf	0			comment 1	comment 2										
26350	28.83	4.17	12.00	99.00	HC-1	66	22.66	21.49	dot&pf	0			no baffles	tier 2 (no bfl)	juv coho	Lo S, FISHPASS	3.0	1.0	hand- d/s		2	2	2	cmp
26890	27.92	2.28	12.00	62.00	HC-1	61	21.64	20.11	dot&pf	1.6			no baffles	tier 2 (no bfl)	juv coho	Lo S, FISHPASS	2.0	1.0	hand- d/s		2	2	2	cmp
27140	27.42	3.15	12.00	66.00	HC-1	64	21.27	21.00	dot&pf	1.2			tier 1	tier 1			2.0	0.7	hand- d/s	4ft: Q(t1)>Q(ex)	4	4	4	cmp
31600	32.59	1.36	12.00	62.00	HC-1	60	27.23	25.55	dot&pf	0			u/s pool excvt'd after 11/05 flood	0.15D baffles	Adult (& juv) coho	BW-12-ft	3.0	1.0	hand- d/s	3ft: Q(t1)>Q(ex)	3	3	3	cmp
33770	32.85	1.65	12.00	66.00	HC-1	56	28.20	27.33	dot&pf	0			u/s pool excvt'd after 11/05 flood	tier 2 (no bfl)	Adult (& juv) coho	BW~10-ft	4.3	0.8	hand- d/s	3ft: Q(t1)>Q(ex)	3	3	3	cmp
40500	36.78	2.28				81	30.50	30.47	dot&pf	0			Large, high quality wetland upstream - dependent on mitigation channel ramp	tier 1 or 2		Perched to Chilkat	3.5		DOT survey	Large, high quality wetland upstream - dependent on mitigation channel ramp	4	4	4	cmp
44300	45.25	1.37	12.00	57.00	HC-1	65	40.38	38.75	dot&pf	0			0.15D baffles	tier 2 - baffled pipe	juv coho	BW-10-ft	9.0		hand- d/s		3.5	3.5	3.5	cmp
55400	43.77	2.01	12.00	66.00	HC-1	63	38.76	37.71	dot&pf	1.2			exist pipe meets fish pass with TW > 0.6-ft	tier 1		Perched to Chilkat	--	--	hand- d/s	3ft: Q(t1)>Q(ex)	3	3	3	cmp
63000	51.37	3.56	12.00	99.00	HC-1	63	45.81	45.36	dot&pf	0			option 1	tier 2		Perched to Chilkat	< 8'-10'		hand	incorp into mitigation channel ramp	2	2	2	cmp
75750	70.88	9.10	12.00	17-34	HC-8	77	56.45	53.43	dot&pf	1.066			option 2	tier 1		BW-6.8-ft			hand	incorp into mitigation ch	7.33	5.33	7'-4"x5'-4"	pipe arch
75750	70.88	10.36	12.00	66.00	HC-1	77	57.52	54.50	dot&pf	0			0.15D baffles	tier 2 - baffled pipe		3ft: Q(t1)>Q(ex)			hand	incorp into mitigation ch	3	3	3	cmp
78750	62.32	2.10	12.00	57.00	HC-1	71	56.72	55.16	dot&pf	0			Perched to Chilkat	3.0		hand	3ft: Q(t1)>Q(ex)			3.5	3.5	3.5	cmp	